

Name: Mr. Davis

Solutions

Total points: 37

3pt 1. Simplify  $16^{\frac{3}{2}}$   $= (16^{\frac{1}{2}})^3 = (\sqrt{16})^3$   
 $= 4^3$   
 $= 64$

3pt 2. Simplify  $32^{\frac{2}{5}}$   $= (32^{\frac{1}{5}})^2$   
 $= 2^2$   
 $= 4$

2pt 3. Write  $x^{\frac{3}{4}}$  in simplified radical form

$(x^{\frac{3}{4}})^{\frac{1}{1}} = \sqrt[4]{x^3}$  or  $x^{\frac{3}{4}}$   
 $(x^{\frac{1}{4}})^3$   
 $(\sqrt[4]{x})^3$

2pt 4. True or False

$(2x)^{\frac{4}{3}} = ((2x)^4)^{\frac{1}{3}}$   
 $= (16x^4)^{\frac{1}{3}}$   
 $= \sqrt[3]{16x^4}$   
 $= 2x^{\frac{4}{3}}\sqrt[3]{2}$

3pt 5. Write  $\sqrt[3]{y}$  in exponential form

$y^{\frac{1}{3}}$

3pt 6. Write  $\sqrt{y^5}$  in exponential form

~~$y^{\frac{5}{2}}$~~   $y^{\frac{5}{2}}$

4pt 7. Simplify  $(27x^4y)^{\frac{1}{2}} \cdot (3x^2y)^{\frac{1}{2}}$

$$\begin{aligned} &\sqrt{27x^4y} \cdot \sqrt{3x^2y} \\ &\sqrt{81x^6y^2} \\ &9x^3y \end{aligned}$$

2pt 8. Simplify  $12\sqrt{7} + 4\sqrt{3} - 2\sqrt{7} + \sqrt{3}$

$$10\sqrt{7} + 5\sqrt{3}$$

6pt 9. Simplify  $6\sqrt{20} + 4\sqrt{45} - 2\sqrt{80}$

$$\begin{aligned} &6\sqrt{4 \cdot 5} + 4\sqrt{9 \cdot 5} - 2\sqrt{16 \cdot 5} \\ &6 \cdot 2\sqrt{5} + 4 \cdot 3\sqrt{5} - 2 \cdot 4\sqrt{5} \\ &12\sqrt{5} + 12\sqrt{5} - 8\sqrt{5} \\ &16\sqrt{5} \end{aligned}$$

6pt 10. Simplify  $4x\sqrt[3]{16x} + \sqrt[3]{54x^4}$

$$\begin{aligned} &4x\sqrt[3]{8 \cdot 2x} + \sqrt[3]{27 \cdot 2x^3} \\ &4x \cdot 2\sqrt[3]{2x} + 3x\sqrt[3]{2x} \\ &8x\sqrt[3]{2x} + 3x\sqrt[3]{2x} \\ &11x\sqrt[3]{2x} \end{aligned}$$

2pt 11. Solve  $\sqrt{3x} = 9$

$$\begin{aligned} 3x &= 81 \\ x &= 27 \end{aligned}$$

3pt 12. Solve  $\sqrt{7x+8} - 4 = 2$

$$\begin{aligned} \sqrt{7x+8} &= 6 \\ 7x+8 &= 36 \\ 7x &= 28 \\ x &= 4 \end{aligned}$$

5pt Challenge Optional Extra Credit: Multiply & Simplify:  $(3\sqrt{5} + 2\sqrt{7})(3\sqrt{5} - 2\sqrt{7})$

$$\begin{aligned} &9\sqrt{25} - \cancel{6\sqrt{35}} + \cancel{6\sqrt{35}} - 4\sqrt{49} \\ &9 \cdot 5 - 4 \cdot 7 \\ &45 - 28 \\ &17 \end{aligned}$$